

SEQUENCE LISTING

<110> Brett P. Monia
Andrew T. Watt

<120> ANTISENSE MODULATION OF INHIBITOR-KAPPA B-R EXPRESSION

<130> RTS-0302

<160> 89

<210> 1

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 1

tccgtcatcg ctcctcaggg

20

<210> 2

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 2

atgcattctg cccccaagga

20

<210> 3

<211> 7543

<212> DNA

<213> Homo sapiens

<220>

<400> 3

ctctgggctg	tgccgtggcc	caccgcaaga	tgggagagcg	cctggccgag	atggaggact	60
acccggctgc	ttgcaggtgc	gggcgcctc	actggcctcg	tccagcccgg	tcggcctctg	120
gagccctttt	ctgaggaggg	aggcctggtc	ttcgccgtca	ggagcctcgg	gctggagggg	180
acacctgacc	tgacgcagcc	ttgccttcac	cgcgccgggc	cagtctccgg	tggggacccc	240
acagcctttc	ctgggactgg	ggcaggagta	ggtttcctgg	caccagaaac	cattactgaa	300
cgttatttta	gctgtgtttg	tgttggggga	ggtcaggccc	catcccaaaa	gctctccctg	360
accctggctg	ctggaggcag	gactgcaacc	cccccgccaa	ctcccagctg	ccctcccca	420
cgtgacagcg	ttggctgcat	acagcgtgaa	gccactgtca	ccacagagag	cccttggcat	480
gcagaggagg	ggcacgtgtc	tggccttggc	ctgctctgtg	ggggttaggg	ggagcaggct	540
ctttccttag	caagaacagg	gtctctggga	atctggcggt	gccggtttgc	ttgaggcgga	600
gtcggcttac	agcagtgact	tccttccaca	ctcagcacca	gcaccagtac	ctggagctgg	660
cacattccct	gcgcaaccac	acggagctgc	agagggcctg	ggccaccatc	ggccgcaccc	720
acctggacat	ctatgaccac	tgccagtcga	gggatgcttt	gctgcaggca	caggctgcct	780
ttgagaagag	cttggctatt	gtggatgagg	agttggaggg	tgggcagacc	cctccgcgtt	840
ttctgcctcc	tgaacttcgg	gccgaagagg	ctgcagccca	gcacccccgc	agcctccttg	900
ggcaatcccg	tcttctggag	ccctcccttt	gcaaggctct	tgtgtgaggg	gtgcatgccc	960
cgctcaacct	ttcccctgga	gatcgtcagc	tctttatcca	ctctgtgctc	catctgccgc	1020
aggacacttg	caccacctc	gggaggaggg	agggggtagg	agaggcgctg	cacaggcccc	1080
aaatggggcc	caaagctgga	aaccccatgt	ggggaggaag	tggctgagtg	tttgggggtt	1140
tatcttccag	ggacactggc	ccagggagag	ctgaatgaga	tgaggacccg	cctctatctc	1200
aacctggggc	tcacctttga	gagcctgcag	cagacagccc	tgtgcaacga	ttacttcagg	1260

aagagcatct tccttgcgga gtaaggccct gccccgctcc aggagggagt ggagtccctt 1320
gttcctggag gaagtagtta ggggagtatt tttcccagag tcctcctgag agagcagtct 1380
ggctgggcct catcccccca cctctcacac ctgtgccaca cactgggaga aggccaggca 1440
tggttagggc cctgagacca cagcatggca gggctggggc ccgtgtggca tcagcagctg 1500
tcatggacac tcctgggtgc tcagtggctg tcacccctct gcaggcagaa ccacctttac 1560
gaggacctat tccgcgcccg ctacaacctg ggcaccatcc actggcgcg cggccagcac 1620
tcccaggcta tgcgctgctt ggaggggtgcc cgggagtgtg cgcacaccat gaggaagcgg 1680
ttcatggaga gcgagtgtg cgtgggttatt gcacaggtag ccgctgtgctg tggctccgag 1740
ctcaggctct cgtagattcg ggccttgggg attctgcaaa acctttgctg tcctttgctc 1800
tccaggctct ccaagacctg ggagactttt tggctgcaa gcgagccctg aagaaggcct 1860
acaggctggg ctcccagaag cctgtgcaga gggcagccat ctgtcagaac ctccagcatg 1920
gtgagcctgg gggccgaat ggggccctgg gaggtgtgtg caggggtgag cctgggggag 1980
gggtgtagtc ccgccagggtg tgtacagggc tctctccctc acagaggagg cctgagcacc 2040
tgtccttga ggcagcagct tcagcaagag gggcaggtac ccctacttcc tgacaggaga 2100
agacccctt tttctctga gctcaacaca gtgtgtcagg ggcaatgaaa gggcgccag 2160
gagaccagct gggcttttat ttcgcagcca ccatcttcat tggcaaactg gagacagtag 2220
ttgtaccct agcctcccag ggtgggagag gagatggcac gcgtgggtcca ggagtgtga 2280
tggcagagac caccattgga ggttggcagc cgtcagccct cactttgatg ccaggcacca 2340
tccatgtgtg gttgtttttt tttcttgaga tggagtctcg ctctgtcacc caggctggag 2400
tgcagtggca tgatctcggc tctctgcaag ctctgcttcc cgggttcatg ccattctcct 2460
gcctcagcct cccgagtagc tgggactaca ggtgcccgc accacacccg gctgattttt 2520
tgtattttta gtagagacga ggtttcacca tgtagccag gatgggtctcg atctcctgac 2580

ctcatgatct gcccgccctcg gcctcccaaa gtccctaggat tacaggcgtg agccactgta 2640
cctggccccg agtttttaag tgtgttagtt cttgtgacct ttgagaccag tccccagat 2700
agaccctgct attaaccccc acaccaacag gcaggcagag gtgtggagag agtggggggg 2760
ccgccacagg gctcacagct tgcagggtgt agagctgggg tcaggggccc ctgtgctgcc 2820
cccctgcatg aacctcttcc cggcagtgtc ggcagtgggtc cggctgcagc aacagctgga 2880
agaggctgag ggcagagacc ctgagggtgc catggctatc tgtgagcagc taggggacct 2940
cttctccaag gcaggagact ttcccagggtc agctgagggt taccagaagc aggtgtgtgg 3000
ccccggctgg gtgggaggga agggccagtg aggttgacga ggcctggcca ggggtggcagc 3060
ccctggcctc actggcactg cccccagctg cgttttgctg agctgctgga cagaccgggt 3120
gctgagcggg ccatcatcca cgtgtccctg gccaccacac tgggagacat gaaggaccac 3180
catggggccg tgcgccacta tgaggaggaa ctgagggtgc gcagcggcaa cgtgctggag 3240
gtgaaaccct tgctccccgc ccgaatgcag gttcaccat gtctctgcct caggactgcc 3300
gttctcaggg tggccatgga cagggtgtcct tactggacgg gcagctcctt cctaggacca 3360
tccaccctcg gcagctggga ggccgggtc ccatttcgtc tgggcagccg gggaagcttg 3420
actggggccc gttggacgca gacagcggca gccccgacc ctgtccttcc tcctgctcca 3480
ggaggccaag acctggctga acattgcact gtcccgcgag gaggccggcg atgcctacga 3540
gctgctggcc ccgtgcttcc agaaagcgct cagctgtgct cagcaggccc agcgtgcccc 3600
gctgcagggt cgagacgcca tcccacccat actggctccc cagttagccc agcttcgttg 3660
cagcctgcct gcccttgtg ccccatcccc atctttctct gcgcccacag cccccagtcc 3720
tgagctgagc atccctctgc tcctcagagg caggctcttc agcatctcca taccgtgcag 3780
ctgaggctgc agccccagga ggcccctgag accgaaacca gactgcggga gctcagtgtg 3840
gctgaagatg aagatgagga ggaggaggcg gaggaggcgg cagccacagc ggagagcgaa 3900

gccctggagg ccggcgaggt ggagctctca gagagcgggtg agggccagcg gcaccttgca 3960
tttccctggg cctgctctgg gccgggctgg agaggggtgt gctgtgctgc tgtggagcct 4020
gcttagggct gtagcaggaa cagccacagg caggcaggac ggccagtgtt tccccgaac 4080
tggacagaga aggtggtgac ccgcagagcc tggggcggcc ttggctcctg gaggagacag 4140
tggttgggag tcgagtgagt gtcagctggg gcatgggtccc gttagagagg cacgtgccat 4200
ctggggccgg gggtagagcg gtgcactttg aagagcyccg gctgcctctg caagagcgtg 4260
agcaccttcc tgaaccctt cagagcaggc ttgggtttcc tccagaggct ggcgacatca 4320
gctgcacgga gggcaggcat gagggactgg ctggagcggg gcttggactg aagccatctt 4380
ggcgtggta caggagaga gggctgagag cggggttagc gggtagctgg gaggctgggt 4440
tctgactgag tgggtgggtg caggagcctg tccatgaggc ctgttggggg gtgttccagg 4500
gaaggctgtg acttcagctc tgaactcgag ggcgtcgtta gaaccctgag tggccaggca 4560
gctgtgggaa gttggggcct tgccaggttg gttgctgggg ggaggtggat caggatctag 4620
aatTTTgggg aatgctgctc agctggtggg cacagtgagg agctgtggaa agaccagag 4680
gcagctggca ggggtgtgaag ggcgtggtga tgaggggtca cccgaagcag ggacggaggc 4740
gggtgtgtct gctgcctagg cagggtggag gctgcaaggt gcaggatacc caggctccag 4800
ggctgacctg gcctgacgac acagctcagg agatgggggt ggataaggcg tggggtggag 4860
gaagactggc ccacgagccg gtctgggctg ggggatgagt ggctggcgca tggacagagg 4920
gggcctcggg caggccttct gtgggagggc caggcgtggg ttagggcaga aagctcaggg 4980
gtgtgtctca agtgggcaga gggatggtgg gcaggagcag ggtcccagca gggtcaggga 5040
gacatgggag gcagcgtgg gaccattgct gaggagcccc cagagcccag cagcctcaga 5100
gctcagccct ccgtctctg gctcctttgt acctgggagt ttggggagct tgcagcaggg 5160
tgggggctgc taaccttcac ctcccacgga ctcccctggg gtgggcttgg ctctgttcca 5220

gaggacgaca ccgatggcct gaccccgag ctggaggagg acgaggagct tcagggccac 5280
ctgggccggc ggaaggggag caaggtgagg acaagtagcc ctgccccac ccaccccgct 5340
cagcagccct gccagctcct cacgcccctg ccctgtgctg ggttggtgtg gccacagtg 5400
gaaccggcga aacgacatgg gggagaccct gctgcaccga gcctgcatcg agggccagct 5460
gcgcccgcgc caggaccttg tgaggcaggt gggccccgct ctgggacgtg ggacaggctg 5520
cctagcacgg aggagctgtg cgtttgtgcc ggatccccta tctctgtaac tctcaacttc 5580
ctcatcttca aaatggggcc ccttagcaag catggtggca cttgcctgtg gtcctagagg 5640
caggaggatc acgtcatcct gggagggaga ttgaggctgc aggagtcgcg atcatgccac 5700
tgactccag cctgggcaac acagtgagac cctgtttcaa aaaaatttaa aaagcggggg 5760
ctgcacgggg tggcttatgc ctgtaatccc agcactttgg gatgccaagg caggcagatc 5820
acatgagccc aggagttcga gaccagcctg ggcaccctgg caagacctg tctccaagaa 5880
atttaaaaat taggtggatg tgatggcgtg tgccgtagt actacagctg ctttgagggt 5940
tgaggtggga gggttgcttg agcctaggag gtggaggctg cagtgagcca tgatcttgcc 6000
actgcactcc aacctgtgtg acagagcaag accctgtctc agaagaaaag ccacaggccg 6060
ggtacagtgg cttatgtcta taatcctagc actttgggag gctgaggcgg ggggattgca 6120
tgaggtcagg agtttgagac cagtctggct aacatggtga aaccctgtct ctactaaaaa 6180
tacaaaaata ttagctgggt atggtggcac atacctgtag tcccagctac tcgggaggct 6240
gaggcaggag aatcgcttga acctgggagg cggagggtgc gatgagatga gattgcgccg 6300
ctgcactcca gcctgggtga cagagcgaga ctctgtctca aaaaaaaca caaaaaatg 6360
gggtgcccag gctgggcgcg gtggttcata cctgtaatcc cagcactttg ggaggccaag 6420
gtgggcagat cacgaggtca ggagcttgag accagcctgg ctggtctcaa aaaaaaatg 6480
gggtacctgc tgtgtggtat gcatctgtgt tacagctaag ttggtcagcc tggccaggat 6540

gggggctagc ccatgggctg agatctgggc accttcctgc cccgcctgcc tcatgcccct 6600
gcgaccaggt gcactgtctc cccacaaggg gaccgggcag gcacagaggc ggaggatatg 6660
ctgtggctgg tccacctgtc tcagggggaa gcatgtcctt cactggtgac acctaggccg 6720
gaggaggaga gggcagggcc acggacttgc tctgggctct aagactgagg ccctgggctc 6780
agcttaggct gcagagctca cggggctggg gccaggctgt gaggtacaca gggccaggct 6840
ccttcctgtc cttggtcaca gggccacccc cttaaccctc gggactactg tggctggaca 6900
cctctgcacg aggcctgcaa ctacgggcat ctaggtgagc aaggacaga aggagcctgg 6960
cgcaccttgg tggacacgtg gggcgaagag tcagtcctgg cggggcatcg ggagctgggc 7020
ttacgtctcc tggctctcag aaattgtccg cttcctgctg gaccacgggg ccgcagtgga 7080
cgaccaggt ggccagggt gcgaaggcat cccccctc cacgatgcc tcaactgtgg 7140
ccacttcgag gtggctgagc tgctgcttga acggggggcg tccgtcacc tccgcactcg 7200
aaagggtgagc ctgggtgggc agagggcaag ggcgaggta tgggggctgc tgtgccctg 7260
ctcaactgat gccacacagg gcctcagccc gctggagacg ctgcagcagt gggatgaagct 7320
gtaccgcagg gacctggacc tggagacgcg gcagaaggcc agggccatgg agatgctgct 7380
ccaggcgggt gcctcgggcc aaggcaagca gggcgctcct tgtccctggg gttgctgtgc 7440
ctacgctgag agtccccggg ccctgatttc gggagatgct ccatcacagg tggagcggga 7500
ggtgccgggc ccctgcctca acacgcattc tctctccac aga 7543

<210> 4

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 4

gcacccacct ggacatctat g

21

<210> 5

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 5

tcatccacaa tagccaagct ctt

23

<210> 6

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Probe

<400> 6

actgccagtc gagggatgct ttgct

25

<210> 7

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 7

gaaggtgaag gtcggagtc

19

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 8
gaagatgggtg atgggatttc

20

<210> 9
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> PCR Probe

<400> 9
caagcttccc gttctcagcc

20

<210> 10
<211> 2525
<212> DNA
<213> Homo sapiens

<220>

<220>
<221> CDS
<222> (849)...(2298)

<400> 10
ctctgggctg tgccgtggcc caccgcaaga tcggagagcg cctggccgag atggaggact 60

acccggctgc ttgcaggtgc gggcgccctc actggcctcg tccagcccgg tcggcctctg 120

gagccctttt ctgaggaggg aggcctggtc ttcgccgtca ggagcctcgg gctggagggg 180

acacctgacc tgacgcagcc ttgccttcac cgtctccgg tggggacccc 240
 acagcctttc ctgggactgg ggcaggagta ggtttcctgg caccagaaac cattactgaa 300
 cgttatttta gctgtgtttg tgttggggga ggtcaggccc catcccaaaa gctctccctg 360
 accctggctg ctggaggcag gactgcaacc ccccgccaa ctccagctg cccctcccca 420
 cgtgacagcg ttggctgcat acagcgtgaa gccactgtca ccacagagag cccttggcat 480
 gcagaggagg ggcacgtgtc tggccttggc ctgctctgtg ggggttaggg ggagcaggct 540
 ctttccttag caagaacagg gtctctggga atctggcggg gccggtttgc ttgaggcgga 600
 gtgggcttac agcagtgact tccttcaca ctcagcacca gcaccagtac ctggagctgg 660
 cacattccct gcgcaaccac acggagctgc agagggcctg ggccaccatc ggccgcaccc 720
 acctggacat ctatgaccac tgccagtcga gggatgcttt gctgcaggca caggctgcct 780
 ttgagaagag cttggctatt gtggatgagg agttggaggg gacactggcc cagggagagc 840
 tgaatgag atg agg acc cgc ctc tat ctc aac ctg ggc ctc acc ttt gag 890
 Met Arg Thr Arg Leu Tyr Leu Asn Leu Gly Leu Thr Phe Glu
 1 5 10
 agc ctg cag cag aca gcc ctg tgc aac gat tac ttc agg aag agc atc 938
 Ser Leu Gln Gln Thr Ala Leu Cys Asn Asp Tyr Phe Arg Lys Ser Ile
 15 20 25 30
 ttc ctt gcg gag cag aac cac ctt tac gag gac cta ttc cgc gcc cgc 986
 Phe Leu Ala Glu Gln Asn His Leu Tyr Glu Asp Leu Phe Arg Ala Arg
 35 40 45
 tac aac ctg ggc acc atc cac tgg cgc gcg ggc cag cac tcc cag gct 1034
 Tyr Asn Leu Gly Thr Ile His Trp Arg Ala Gly Gln His Ser Gln Ala
 50 55 60
 atg cgc tgc ttg gag ggt gcc cgg gag tgt gcg cac acc atg agg aag 1082
 Met Arg Cys Leu Glu Gly Ala Arg Glu Cys Ala His Thr Met Arg Lys
 65 70 75
 cgg ttc atg gag agc gag tgc tgc gtg gtt att gca cag gtc ctc caa 1130
 Arg Phe Met Glu Ser Glu Cys Cys Val Val Ile Ala Gln Val Leu Gln

80	85	90	
gac ctg gga gac ttt ttg gct gcc aag cga gcc ctg aag aag gcc tac			1178
Asp Leu Gly Asp Phe Leu Ala Ala Lys Arg Ala Leu Lys Lys Ala Tyr			
95	100	105	110
agg ctg ggc tcc cag aag cct gtg cag agg gca gcc atc tgt cag aac			1226
Arg Leu Gly Ser Gln Lys Pro Val Gln Arg Ala Ala Ile Cys Gln Asn			
	115	120	125
ctc cag cat gtg ctg gca gtg gtc cgg ctg cag caa cag ctg gaa gag			1274
Leu Gln His Val Leu Ala Val Val Arg Leu Gln Gln Gln Leu Glu Glu			
	130	135	140
gct gag ggc aga gac cct cag ggt gcc atg gtc atc tgt gag cag cta			1322
Ala Glu Gly Arg Asp Pro Gln Gly Ala Met Val Ile Cys Glu Gln Leu			
	145	150	155
ggg gac ctc ttc tcc aag gca gga gac ttt ccc agg gca gct gag gct			1370
Gly Asp Leu Phe Ser Lys Ala Gly Asp Phe Pro Arg Ala Ala Glu Ala			
	160	165	170
tac cag aag cag ctg cgt ttt gct gag ctg ctg gac aga ccg ggt gct			1418
Tyr Gln Lys Gln Leu Arg Phe Ala Glu Leu Leu Asp Arg Pro Gly Ala			
	175	180	185
gag cgg gcc atc atc cac gtg tcc ctg gcc acc aca ctg gga gac atg			1466
Glu Arg Ala Ile Ile His Val Ser Leu Ala Thr Thr Leu Gly Asp Met			
	195	200	205
aag gac cac cat ggg gcc gtg cgc cac tat gag gag gaa ctg agg ctg			1514
Lys Asp His His Gly Ala Val Arg His Tyr Glu Glu Glu Leu Arg Leu			
	210	215	220
cgc agc ggc aac gtg ctg gag gag gcc aag acc tgg ctg aac att gca			1562
Arg Ser Gly Asn Val Leu Glu Glu Ala Lys Thr Trp Leu Asn Ile Ala			
	225	230	235
ctg tcc cgc gag gag gcc ggc gat gcc tac gag ctg ctg gcc ccg tgc			1610
Leu Ser Arg Glu Glu Ala Gly Asp Ala Tyr Glu Leu Leu Ala Pro Cys			
	240	245	250
ttc cag aaa gcg ctc agc tgt gct cag cag gcc cag cgt gcc cag ctg			1658
Phe Gln Lys Ala Leu Ser Cys Ala Gln Gln Ala Gln Arg Ala Gln Leu			

255	260	265	270	
cag agg cag gtc ttg	cag cat ctc cat acc gtg	cag ctg agg ctg cag		1706
Gln Arg Gln Val Leu	Gln His Leu His Thr Val	Gln Leu Arg Leu Gln		
275	280	285		
ccc cag gag gcc cct	gag acc gaa acc aga ctg	cgg gag ctc agt gta		1754
Pro Gln Glu Ala Pro	Glu Thr Glu Thr Arg Leu	Arg Glu Leu Ser Val		
290	295	300		
gct gaa gat gaa gat	gag gag gag gag gcg	gag gcg gca gcc aca		1802
Ala Glu Asp Glu Asp	Glu Glu Glu Glu Ala	Glu Glu Ala Ala Thr		
305	310	315		
gcg gag agc gaa gcc	ctg gag gcc ggc gag	gtg gag ctc tca gag		1850
Ala Glu Ser Glu Ala	Leu Glu Ala Gly Glu	Val Glu Leu Ser Glu		
320	325	330		
gag gac gac acc gat	ggc ctg acc ccg cag	ctg gag gag gac gag		1898
Glu Asp Asp Thr Asp	Gly Leu Thr Pro Gln	Leu Glu Glu Asp Glu		
335	340	345	350	
ctt cag ggc cac ctg	ggc cgg cgg aag ggg	agc aag tgg aac cgg		1946
Leu Gln Gly His Leu	Gly Arg Arg Lys Gly	Ser Lys Trp Asn Arg		
355	360	365		
aac gac atg ggg gag	acc ctg ctg cac cga	gcc tgc atc gag ggc		1994
Asn Asp Met Gly Glu	Thr Leu Leu His Arg	Ala Cys Ile Glu Gly		
370	375	380		
ctg cgc cgc gtc cag	gac ctt gtg agg cag	ggc cac ccc ctt aac		2042
Leu Arg Arg Val Gln	Asp Leu Val Arg Gln	Gly His Pro Leu Asn		
385	390	395		
cgg gac tac tgt ggc	tgg aca cct ctg cac	gag gcc tgc aac tac		2090
Arg Asp Tyr Cys Gly	Trp Thr Pro Leu His	Glu Ala Cys Asn Tyr		
400	405	410		
cat cta gaa att gtc	cgc ttc ctg ctg gac	cac ggg gcc gca gtg		2138
His Leu Glu Ile Val	Arg Phe Leu Leu Asp	His Gly Ala Ala Val		
415	420	425	430	
gac cca ggt ggc cag	ggc tgc gaa ggc atc	acc ccc ctc cac gat		2186
Asp Pro Gly Gly Gln	Gly Cys Glu Gly Ile	Thr Pro Leu His Asp		
		Ala		

435 440 445
 ctc aac tgt ggc cac ttc gag gtg gct gag ctg ctg ctt gaa cgg ggg 2234
 Leu Asn Cys Gly His Phe Glu Val Ala Glu Leu Leu Leu Glu Arg Gly
 450 455 460
 gcg tcc gtc acc ctc cgc act cga aag ggc ctc agc ccg ctg gag acg 2282
 Ala Ser Val Thr Leu Arg Thr Arg Lys Gly Leu Ser Pro Leu Glu Thr
 465 470 475
 ctg cag cag tgg gtg aagctgtacc gcagggacct ggacctggag acgcgggcaga 2337
 Leu Gln Gln Trp Val
 480
 aggccagggc catggagatg ctgctccagg cggctgcctc gggccaaggc aagcagggcg 2397
 tcccttgtcc ctgggggttg tgtgcctacg ctgagagtcc ccggggcctg atttcgggag 2457
 atgctccatc acaggtggag cgggaggtgc cggggccctg cctcaacacg cattctctct 2517
 cccacaga 2525
 <210> 11
 <211> 1813
 <212> DNA
 <213> Homo sapiens
 <220>
 <220>
 <221> CDS
 <222> (325)...(1770)
 <400> 11
 aattcgcgta ctagccggac ttggattttc tggaaagatt tcagttgagg aacgggaaca 60
 aagattatga tagctttccg accaccacca acttcaattt ccttagctgc cgtaatatca 120
 gtcacctgag ctgagccttg aggtccgagt tcattctccag ctccagaaga gcctgggaga 180
 tgccggactc gaactcgtcc gcttctcgcc attgggcttc acgatcttgg cgctcgaact 240
 gaacatggct tctcctttga gaagagcttg gctattgtgg atgaggagct ggagggggaca 300

ctggcgcagg gagagctgaa tgag atg agg acc cgc ctc tat ctc aac ctg	351
Met Arg Thr Arg Leu Tyr Leu Asn Leu	
1 5	
ggc ctc acc ttt gag agc ctg cag cag aca gcc ctg tgc aac gat tac	399
Gly Leu Thr Phe Glu Ser Leu Gln Gln Thr Ala Leu Cys Asn Asp Tyr	
10 15 20 25	
ttc agg aag agc atc ttc ctt gcg gac gag aac cac ctt tac gag gac	447
Phe Arg Lys Ser Ile Phe Leu Ala Asp Glu Asn His Leu Tyr Glu Asp	
30 35 40	
cta ttc cgc gcc cgc tac aac ctg ggc acc atc cac tgg cgc gcg ggc	495
Leu Phe Arg Ala Arg Tyr Asn Leu Gly Thr Ile His Trp Arg Ala Gly	
45 50 55	
cag cac tcc cag gct atg cgc tgc ttg gag ggt gcc cgg gag tgt gcg	543
Gln His Ser Gln Ala Met Arg Cys Leu Glu Gly Ala Arg Glu Cys Ala	
60 65 70	
cac acc atg agc gaa gcg gtt cat gga gag cga gtg ctg cgt ggt tat	591
His Thr Met Ser Glu Ala Val His Gly Glu Arg Val Leu Arg Gly Tyr	
75 80 85	
tgc aca ggt cct cca aga cct ggg aga ctt ttt ggc tgc caa gcg agc	639
Cys Thr Gly Pro Pro Arg Pro Gly Arg Leu Phe Gly Cys Gln Ala Ser	
90 95 100 105	
cct gaa gaa gcg cta cag gct ggg ctc cca gaa gcc tgt gca gag ggc	687
Pro Glu Glu Ala Leu Gln Ala Gly Leu Pro Glu Ala Cys Ala Glu Gly	
110 115 120	
agc cat ctg tca gaa cct cca gca tgt gct gca gtg gtc cgg ctg cag	735
Ser His Leu Ser Glu Pro Pro Ala Cys Ala Ala Val Val Arg Leu Gln	
125 130 135	
caa cag ctg gaa gag gct gag ggc aga gac cct cag ggt gcc atg gtc	783
Gln Gln Leu Glu Glu Ala Glu Gly Arg Asp Pro Gln Gly Ala Met Val	
140 145 150	
atc tgt gag cag cta ggg gac ctc ttc tcc aag gca gga gac ttt ccc	831
Ile Cys Glu Gln Leu Gly Asp Leu Phe Ser Lys Ala Gly Asp Phe Pro	
155 160 165	

agg gca gct gag gct tac cag aag cag ctg cgt ttt gct gag ctg ctg 879
 Arg Ala Ala Glu Ala Tyr Gln Lys Gln Leu Arg Phe Ala Glu Leu Leu
 170 175 180 185

gac aga ccg ggt gct gag cgg gcc atc atc cac gtg tcc ctg gcc acc 927
 Asp Arg Pro Gly Ala Glu Arg Ala Ile Ile His Val Ser Leu Ala Thr
 190 195 200

aca ctg gga gac atg aag gac cac cat ggg gcc gtg cgc cac tat gag 975
 Thr Leu Gly Asp Met Lys Asp His His Gly Ala Val Arg His Tyr Glu
 205 210 215

gag gaa ctg agg ctg cgc agc ggc aac gtg ctg gag gag gcc aag acc 1023
 Glu Glu Leu Arg Leu Arg Ser Gly Asn Val Leu Glu Glu Ala Lys Thr
 220 225 230

tgg ctg aac att gca ctg tcc cgc gag gag gcg cga tgc cta cga gct 1071
 Trp Leu Asn Ile Ala Leu Ser Arg Glu Glu Ala Arg Cys Leu Arg Ala
 235 240 245

gct ggc ccc gtg ctt cca gaa agc gct cag ctg tgc cca gca ggc cca 1119
 Ala Gly Pro Val Leu Pro Glu Ser Ala Gln Leu Cys Pro Ala Gly Pro
 250 255 260 265

gcg tcc cca gct gca gag gca ggt ctt gca gca tct cca tac cgt gca 1167
 Ala Ser Pro Ala Ala Glu Ala Gly Leu Ala Ala Ser Pro Tyr Arg Ala
 270 275 280

gct gag ggc tgc agg ccc cag gag gcc cct gag acc gaa acc aga ctg 1215
 Ala Glu Gly Cys Arg Pro Gln Glu Ala Pro Glu Thr Glu Thr Arg Leu
 285 290 295

cgg gag ctc agt gta gct gaa gat gaa gat gag gag gag gag gcg gag 1263
 Arg Glu Leu Ser Val Ala Glu Asp Glu Asp Glu Glu Glu Glu Ala Glu
 300 305 310

gag gcg gca cac agc gga gag cga acg cct gga ggc cgg cga ggt gga 1311
 Glu Ala Ala His Ser Gly Glu Arg Thr Pro Gly Gly Arg Arg Gly Gly
 315 320 325

gct ctc aga gag cga gga cga cac cga tgg cct gac ccc gca gct gga 1359
 Ala Leu Arg Glu Arg Gly Arg His Arg Trp Pro Asp Pro Ala Ala Gly
 330 335 340 345

gga gga cga gga gct tca ggg cca cct ggg gcc gcc aag ggg agc aag 1407
 Gly Gly Arg Gly Ala Ser Gly Pro Pro Gly Ala Ala Lys Gly Ser Lys
 350 355 360

tgg aac cgg cga aac gac atg ggg gag acc ctg ctg cac cga gcc tgc 1455
 Trp Asn Arg Arg Asn Asp Met Gly Glu Thr Leu Leu His Arg Ala Cys
 365 370 375

atc gag ggc cag ctg cgc cgc gtc cag gac ctt gtg agg cag ggc cac 1503
 Ile Glu Gly Gln Leu Arg Arg Val Gln Asp Leu Val Arg Gln Gly His
 380 385 390

ccc ctt aac cct cgg gac tac tgt ggc tgg aca cct ctg cac gag gcc 1551
 Pro Leu Asn Pro Arg Asp Tyr Cys Gly Trp Thr Pro Leu His Glu Ala
 395 400 405

tgc aac tac ggg cat cta gaa att gtc cgc ttc ctg ctg gac cac ggg 1599
 Cys Asn Tyr Gly His Leu Glu Ile Val Arg Phe Leu Leu Asp His Gly
 410 415 420 425

gcc gca gtg gac gac cca ggt ggc cag ggc tgc gaa ggc atc acc ccc 1647
 Ala Ala Val Asp Asp Pro Gly Gly Gln Gly Cys Glu Gly Ile Thr Pro
 430 435 440

ctc cac gat gcc ctc aac tgt ggc cac ttc gag gtg gct gag ctg ctg 1695
 Leu His Asp Ala Leu Asn Cys Gly His Phe Glu Val Ala Glu Leu Leu
 445 450 455

ctt gaa cgg ggg gcg tcc gtc acc ctc cgc act cga aag gcc tca gcg 1743
 Leu Glu Arg Gly Ala Ser Val Thr Leu Arg Thr Arg Lys Ala Ser Ala
 460 465 470

cgc tgg aga cgc tgc agc agt ggg tga agctgtaccg cggagacctg 1790
 Arg Trp Arg Arg Cys Ser Ser Gly
 475 480

gactggagac gcgggcggaa ttc 1813

<210> 12

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 12

tcggaaagct atcataatct

20

<210> 13

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 13

atattacggc agctaaggaa

20

<210> 14

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 14

ctcagctcag ggagctgata

20

<210> 15

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 15

gaactcggac ctcaaggctc

20

<210> 16

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 16

gacgggattg cccaaggagg

20

<210> 17

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 17

actgagcacc caggagtgtc

20

<210> 18

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 18

gggccacaca cctgcttctg

20

<210> 19

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 19

ctacagccct aagcaggctc

20

<210> 20

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 20

tcctccagga gccaaggccg

20

<210> 21

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 21

cctgagcttt ctgccctaac

20

<210> 22

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 22

caggctggag tgcagtggca

20

<210> 23

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 23

acaggttgga gtgcagtggc

20

<210> 24

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 24

gtgcagcggc gcaatctcat

20

<210> 25

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 25

ttctgcagac caggagacgt

20

<210> 26
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 26
tccgatcttg cggtagggcca

20

<210> 27
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 27
tgcagtcctg cctccagcag

20

<210> 28
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 28
cggcaccgcc agattcccag

20

<210> 29
<211> 20
<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 29

agtcactgct gtaagccgac

20

<210> 30

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 30

gctccaggta ctggtgctgg

20

<210> 31

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 31

gccctctgca gctccgtgtg

20

<210> 32

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 32

aggccctctg cagctccgtg

20

<210> 33

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 33

tagatgtcca ggtgggtgcg

20

<210> 34

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 34

cgactggcag tggcataga

20

<210> 35

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 35

cacaatagcc aagctcttct

20

<210> 36

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 36

cgggtcctca tctcattcag

20

<210> 37

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 37

tgcacagggc tgtctgctgc

20

<210> 38

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 38

ctgaagtaat cgttgcacag

20

<210> 39

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 39

gtggttctgc tccgcaagga

20

<210> 40

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 40

cgtaaagggtg gttctgctcc

20

<210> 41

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 41

cggaataggt cctcgtaaag

20

<210> 42

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 42

gtgcccaggt tgtagcgggc

20

<210> 43

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 43

cagcgcatag cctgggagtg

20

<210> 44

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 44

gcaccctcca agcagcgcat

20

<210> 45

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 45

tcctcatggt gtgcgcacac

20

<210> 46

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 46

catgaaccgc ttcctcatgg

20

<210> 47

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 47

agcactcgct ctccatgaac

20

<210> 48

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 48

tgcaataacc acgcagcact

20

<210> 49

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 49

cttggaggac ctgtgcaata

20

<210> 50

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 50

acaggcttct gggagcccag

20

<210> 51

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 51

gctgccctct gcacaggctt

20

<210> 52

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 52

ctggagggttc tgacagatgg

20

<210> 53
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 53
ccagcacatg ctggagggttc

20

<210> 54
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 54
ccggaccact gccagcacat

20

<210> 55
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 55
gcagccggac cactgccagc

20

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 56

agcctcttcc agctgttgct

20

<210> 57

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 57

tgaccatggc accctgaggg

20

<210> 58

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 58

ctcacagatg accatggcac

20

<210> 59

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 59

ctgctcacag atgaccatgg

20

<210> 60

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 60

ggtcccctag ctgctcacag

20

<210> 61

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 61

gccttgagaga agaggtcccc

20

<210> 62

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 62

ctcctgcctt ggagaagagg

20

<210> 63

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 63

tgccctggga aagtctcctg

20

<210> 64

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 64

tcagctgccc tgggaaagtc

20

<210> 65

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 65

caaaacgcag ctgcttctgg

20

<210> 66

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 66

ggtctgtcca gcagctcagc

20

<210> 67

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 67

gatgatggcc cgctcagcac

20

<210> 68

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 68

ccccatggtg gtccttcacg

20

<210> 69

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 69

tcctcctcat agtggcgcac

20

<210> 70
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 70
agttcctcct catagtggcg

20

<210> 71
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 71
agcctcagtt cctcctcata

20

<210> 72
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 72
tcttggcctc ctccagcacg

20

<210> 73
<211> 20
<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 73

caggtcttgg cctcctccag

20

<210> 74

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 74

gccaggtctt ggcctcctcc

20

<210> 75

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 75

ccagcagctc gtaggcacgcg

20

<210> 76

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 76

ctgctgagca cagctgagcg

20

<210> 77

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 77

agacctgcct ctgcagctgg

20

<210> 78

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 78

gctgcaagac ctgcctctgc

20

<210> 79

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 79

agatgctgca agacctgcct

20

<210> 80
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 80
ggagatgctg caagacctgc

20

<210> 81
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 81
ctcagctgca cggatatggag

20

<210> 82
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 82
gggctgcagc ctcagctgca

20

<210> 83
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 83

tgagctcccg cagtctggtt

20

<210> 84

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 84

gtgtcgtcct cgctctctga

20

<210> 85

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 85

gtacagcttc acccactgct

20

<210> 86

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 86

ccgcgtctcc aggtccaggt

20

<210> 87

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 87

cctgcttgcc ttggcccgag

20

<210> 88

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 88

gactctcagc gtaggcacag

20

<210> 89

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 89

tgatggagca tctcccgaaa

20